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SOURCE Botanicheskiy Zhurnal, Vol XXXVII, No 6, 1952, pp 798-842.USSR CRITICISM OF T. D. LYSENKO'S THEORY OF SPECIES

Comment: The following two discussions of Lysenko's theory of species are taken from two extensive articles in the November - December 1952 issue of Botanicheskiy Zhurnal criticising Lysenko's theory of the origin of species. According to a note by the Soviet editors, the problem of species and species formation hitherto had not been adequately discussed in this journal. Therefore, the Soviet editors state, a thorough discussion of the problem of species from the standpoint of advanced Michurinist biology will serve a useful purpose. According to the note, the editorial board of the journal has thus opened a discussion of the problem by publishing the articles of N. V. Turbin and N. D. Ivanov, and invites other Soviet botanists to express their views on the subject.

Numbers in parentheses refer to appended sources.]

N. V. Turbin's Discussion

The Communist Party has urged all Soviet scientists to apply constructive criticism to raise the level of science and thus enable it to solve current problems more effectively. As far as constructive criticism is concerned, the present situation of the problem of species formation is highly unsatisfactory. Although Lysenko's theory is only 2-3 years old, it aspires to some sort of monopoly in our science. At the same time, Darwin's evolutionary theory, once held in high esteem by adherents of Marxism and Leninism, is considered to be out of date.

Contrary to Lysenko's views, Darwin's theory does not deny that qualitative changes occur in addition to quantitative changes in the course of development of living nature. One cannot agree with Lysenko's assertion that Darwin's theory is primarily metaphysical. While Lysenko postulates formation of a new species from an old by an abrupt jump, Darwinism assumes that there is gradual evolution

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through a number of intermediate stages. The qualitative change still occurs, however: the changes are not merely quantitative ones which amount to growth only. Darwinism does not negate the existence of border lines between species; it merely regards the transitions which correspond to these border lines as gradual and relative. In this respect, Darwinism is in complete accord with dialectical materialism.

While Darwin's theory correctly reflects known facts of evolution that are based on paleontological findings, Lysenko's theory is in conflict with those findings. If we assume, in accordance with Lysenko's theory, that a certain species may originate not only once but several times in the course of evolution from several parent species, and in turn may even be transmuted back into its parent species, we arrive at a conclusion which is not in accordance with observed facts of geochronological paleontological stratigraphy.

Darwin's evolutionary theory of natural selection explains adaptation satisfactorily, while Lysenko's theory does not. Lysenko states that this theory of species formation is in accordance with I. V. Michurin's teachings, but Michurin, in contradistinction to Lysenko, believes that there is slow and gradual evolution in nature, although the course of evolution may be speeded up by man. Originally, Lysenko defended Darwinism against the attacks made against it by adherents of Mendelism-Morganism. At present, he criticizes the very basis of Darwinism and supports his criticism by the following data.

In 1947-48, V. K. Karapetyan, Lysenko's collaborator, conducted experiments on the modification of a summer variety of *Triticum durum* into winter wheat by changing the conditions of planting. As a result of being planted in the fall, *Triticum durum*, which normally has 26 chromosomes, developed, in the third generation, plants having the species characteristics of the soft wheat *T. vulgare*, which has 42 chromosomes. It was later established that individual grains of soft wheat sometimes occur in hard-wheat plants. In 1952, M. M. Yakuttsiner published data on the occurrence of individual rye grains in wheat plants. These findings, which have been interpreted as proving spontaneous transmutation of wheat into rye, were made in localities of the Caucasus where conditions for the growing of wheat are not particularly favorable. The wheat fields in these localities are strongly contaminated with rye. Later similar findings were made with respect to other plants. On the basis of these findings, spontaneous generation of rye by wheat, of weeds by cultivated cereal plants, of firs by pines, etc., was assumed by Lysenko and his pupils.

If the explanation of the phenomena that has been advanced by Lysenko's school is correct, it is difficult to explain why only known species are generated, while spontaneous generation of entirely new, hitherto unknown species, is never observed. The phenomena described by Lysenko's school are not essentially new; it has been known for a long time that plants occasionally develop characteristics of other, closely related species. The most likely explanation is hybridization owing to pollination of female plants with pollen of the same species combined with a certain proportion of pollen of another species. Lysenko's arguments in favor of spontaneous generation of new species are not supported by facts which he cites in that connection.(1)

Ivanov's Discussion

Comment: Ivanov's article, which follows that by Turbin in the same issue of *Botanicheskiy Zhurnal*, repeats many of Turbin's arguments. However, the relative emphasis given to them by Ivanov is slightly different. Thus, Ivanov stresses to a greater extent than Turbin that adaptation cannot be explained satisfactorily if Darwin's theory of gradual evolution is rejected and Lysenko's

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theory of spontaneous generation of species is substituted for it. In addition to criticizing Lysenko's theory along the same general lines as Turbin, Ivanov also advances arguments which are not contained in Turbin's article. Some of these arguments follow.]

In outlining his new theory of the origin of species, Lysenko did not criticize the school of A. Weisman and T. G. Morgan; his criticism was leveled against Darwin and K. A. Timiryazev. The reason is that his theory does not contain any substantial points which are in conflict with the precepts of that school. Morgan attempted to replace Darwin's progressive teaching to the effect that organisms are capable of multiplying in a geometric progression, once the obstacles to their multiplication have been removed, by a reactionary theory to the effect that many species would disappear altogether if they did not produce an excessive number of eggs. In advancing this theory, Morgan substantially postulates that living organisms have an enormous capacity to die. Adherents of Weisman and Morgan deny the effects of overpopulation, and so does Lysenko; they deny that there is competition between species [belonging to the same genus], and so does Lysenko; they reject natural selection, and so does Lysenko. Darwinism cannot be accused of being a variation of the Malthusian theory: Darwin's theory is diametrically opposed to Malthus's assumption that the production of means of subsistence cannot be increased at a rate corresponding to that of the growth of population. Anyone who refuses to explain the evolution of organisms by natural and historical causes is bound to sink into the idealistic morass of the Weisman-Morgan school.

The reasons Lysenko, who is one of our outstanding biologists, made the errors mentioned above are threefold. First, he started from the wrong precept that processes leading to the formation of new species take place in exactly the same manner irrespectively of the presence or absence of conscious human interference. Secondly, in attempting to equate the two types of processes (those taking place in the absence of human interference and those occurring when there is active human interference), Lysenko deviated from both Darwinism and Michurin's teaching. Thirdly, Lysenko's views have not been adequately criticized by USSR biologists.(2)

SOURCES

1. N. V. Turbin, "Darwinism and the New Theory of Species," Botanicheskiy Zhurnal, Vol XXXVII, No 6, 1952, pp 798-818
2. N. D. Ivanov, "Concerning N. D. Lysenko's New Theory of Species," Botanicheskiy Zhurnal, Vol XXXVII, No 6, 1952, pp 819-842

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